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Research
Laboratory

Quality of Western Canadian Feed Barley 1989

Canada

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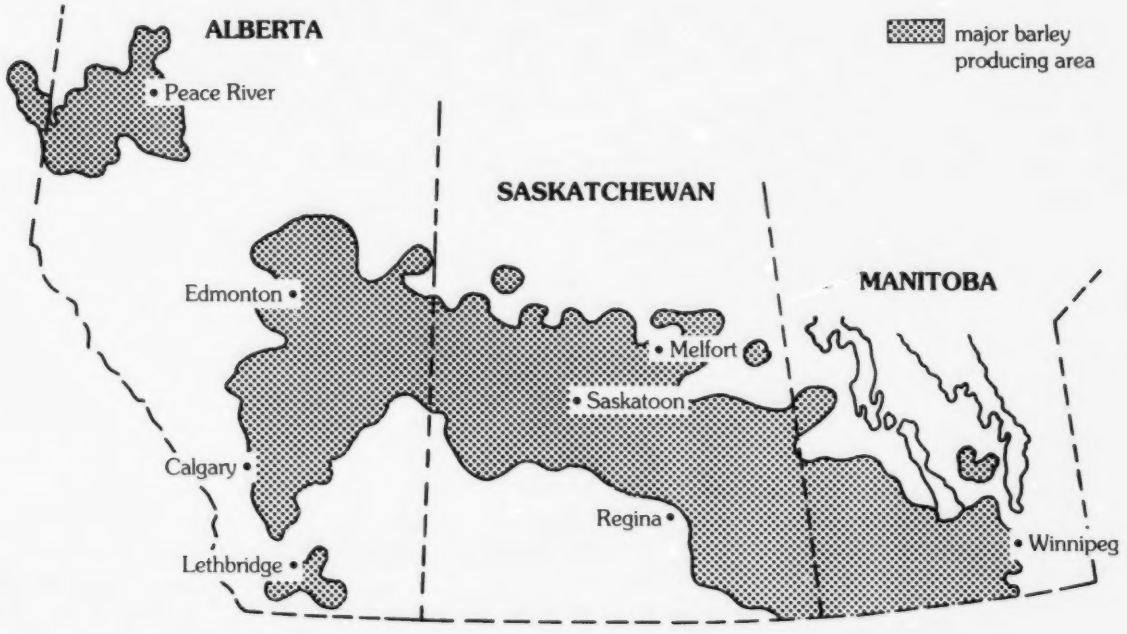
Introduction

This bulletin presents a review of the conditions under which the 1989 barley crop was grown and harvested, as well as preliminary quality data for the No. 1 Canada Western grade. Since this grade annually represents a high proportion of the barley grown, the data give a good indication of the quality of the 1989 crop available for feeding purposes. The map shows the major barley growing areas in Western Canada.

Figure 1: Major Barley Producing Area in Canada



Growing and Harvesting Conditions

The outlook for barley at seeding was rather mixed. In Manitoba and Saskatchewan, soil moisture reserves were very limited following dry weather in 1988 and a dry spring in 1989. In Alberta, particularly further west, reserves were generally much better.

May was quite warm and dry in Manitoba, and virtually all of the barley was sown by the end of the month. Saskatchewan was not far behind, but cool conditions in Alberta caused seeding delays - with only 65% seeded by that time. June weather, with widespread rains in many areas, eased drought fears.

The optimism over production prospects at the end of June faded during July, as Saskatchewan and Manitoba endured a hot, dry month and the long-term lack of moisture came into play. Hot weather and low rainfall conditions persisted into August. In Alberta, too, an extended warm, dry spell from mid-July to mid-August reduced yield expectations.

Harvesting conditions varied considerably across the provinces. Dry weather in Manitoba resulted in 70% of the crop being harvested by the end of August, while Saskatchewan was 50% complete and Alberta 10% by then. Frequent rains in late August and early September significantly reduced harvest progress in most areas. Combining picked up in mid-September when warm, drier weather returned. By the end of September, the Manitoba harvest was complete, Saskatchewan almost complete and Alberta 75% complete. The rainfall during the harvest period caused some lodging of the standing crop and a substantial amount of weathering in the harvested barley.

Production

The hot, dry weather during July and August in Manitoba and Saskatchewan restricted grain filling and reduced grain yields. Most recent estimates suggest that the total Manitoba production will be 44% higher than that in 1988 (Table 1) but still 15% lower than the average production of the previous ten years. Similarly, Saskatchewan production is expected to be 43% higher than that in 1988 and only 1% lower than the ten-year average. Alberta's production is estimated to be only 5% higher than in 1988 and 4% lower than the ten-year average. Total barley production is expected to be about 5% lower than the 11.2 million tonne average for the previous ten years.

1. Barley Production in Western Canada for 1989 and 1988[1]

	Seeded Area		Production	
	1989	1988	1989	1988
	(thousand hectares)		(thousand tonnes)	
Manitoba	647	567	1 568	1 089
Saskatchewan	1 497	1 234	2 983	2 090
Alberta[2]	2 161	1 947	6 257	5 941
Total	**4 305**	**3 748**	**10 808**	**9 120**

[1] Statistics Canada, *Field Crop Reporting Series*, No. 7, October 4, 1989
[2] Alberta figures include small amounts grown in British Columbia

Crop Quality

The hot, dry conditions that persisted during grain filling reduced the barley test weight and increased the protein content (Table 2) compared with material that was exported during the 1988-89 crop year (Table 3). In addition, the relatively poor conditions under which much of Alberta's crop was harvested are expected to produce some barley with sprout damage, mildew and somewhat increased staining. However, such damage is not expected to affect the feeding quality of the barley.

2: Analysis of Provincial Composites of 1989 Harvest Survey No. 1 CW Barley

	Protein Content[1] (N x 6.25)	Test Weight	Plump Kernels (over 6/64" sieve)	ß-Glucan Content
	(%)	(kg/hL)	(%)	(%)
Manitoba	13.6	64.0	57.2	4.1
Saskatchewan	14.4	65.5	77.3	4.5
Alberta	13.2	62.8	71.2	4.3

[1] dry matter basis

3: Analysis of 1988-89 Crop Year Export Shipments of No. 1 CW Barley

	Protein Content[1] (N x 6.25)	Test Weight	Plump Kernels (over 6/64" sieve)	ß-Glucan Content
	(%)	(kg/hL)	(%)	(%)
Atlantic Ports	12.5	66.5	73.5	4.4
Pacific Ports	12.2	67.0	73.2	4.4

[1] dry matter basis

Improvement of Western Canadian Feed Barley

A barley monitoring group has been established to provide leadership and guidance for research and related activities designed to improve the appearance and nutritive value of feed barley from western Canada. This interdisciplinary group consists of representatives from the Canadian Wheat Board, the Canadian Grain Commission, scientists from western Canada conducting research into the development and utilization of barley as a feed grain and other persons engaged in related fields.

One recommendation from the monitoring group has already been put in place. As of August 1, 1989 the maximum tolerances for weed seeds and wild oats in the Export Standards were reduced from 2.5% to 1.5% in No. 1 Canada Western Barley and from 5% to 2.5% in No.2 Canada Western Barley. Preliminary data show that the new export standards have resulted in a lowering of the wild oat, other grains and foreign material content in barley export shipments made from the West Coast since August 1, 1989.

Methods

Notes on the methods used at the Grain Research Laboratory for the collection of samples and for the quality tests on barley are given below.

SAMPLES. Samples of harvest survey barley were submitted to the Grain Research Laboratory by the elevator managers of firms operating licensed primary elevators in Western Canada. Of the total number of samples submitted (2 861), only those qualifying for the No. 1 CW barley grade (966) were included in this survey. For each provincial composite the number of samples selected was proportional to Statistics Canada's August estimates of production in each crop district.

Composite samples representing export cargo shipments from Atlantic and Pacific ports for the 1988-89 crop year were prepared from samples taken at terminal and transfer elevators during the vessel loading process.

TEST WEIGHT. The weight per hectolitre was determined with the Schopper Chondrometer using the one-litre container. Results reported were determined by dividing the weight of the grain in grams by ten.

PLUMP KERNELS. The sample was passed over a 6/64" by 3/4" slotted sieve. Barley remaining on top of the sieve is reported as percent plump kernels.

PROTEIN (N x 6.25). The protein content of composite samples was determined on a one-gram sample by the Kjeldahl method as modified by Williams, P.C., *Journal of the Science of Food and Agriculture* 24, 343-348, 1973. Results are reported on a dry matter basis. Individual survey samples were tested for protein content using near-infrared reflectance spectroscopy calibrated against the Kjeldahl method.

BETA-GLUCAN. Barley was analyzed for beta-glucan by the procedure of McCleary, B.V. and Glennie-Holmes, M., *Journal of the Institute of Brewing* 91, 285-295, 1985, combined with the glucose assay described in the *Gluco-Quant Assay* kit from Boehringer Mannheim, 11150 Cote de Liesse, Dorval, Quebec, Canada.

Acknowledgements

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